

ROYAL BOTANIC GARDENS, KEW.

BULLETIN
OF
MISCELLANEOUS INFORMATION.

No. 7]

[1925

XXXII.—FLORA CAPENSIS.

SIR W. T. THISELTON-DYER, K.C.M.G., C.I.E.

The completion of so considerable an undertaking as the *Flora Capensis* justifies some interest in the circumstances of its commencement and the various fortunes of its progress. Its preparation was first suggested in a memorandum drawn up in 1863 by Sir William Hooker for the Colonial Office, giving a detailed plan for what was virtually a Botanical Survey of the Empire; this is reprinted in the *Kew Bulletin*, 1905, pp. 18–22. In the list of the several Floras recommended, that for the “South African Colonies” stands second. As a matter of fact, the *Flora Capensis* had already been started in 1860 at the suggestion of Sir William Hooker. It was undertaken by Dr. Harvey, “some-time Treasurer of Cape Colony,” the Professor of Botany in the University of Dublin. He “undertook to print and publish the *Flora* at his own risk and cost, trusting chiefly to colonial subscriptions for a repayment of the outlay” (*Natural History Review*, 1861, p. 259). Dr. Sonder, of Hamburgh, “gladly accepted Dr. Harvey’s offer to share the authorship.”

The Governor, “Sir George Grey was mainly instrumental in obtaining a grant from the Colonial Parliament” of £150 per volume. “This relieved the authors from much of the cost of publication; and at the same time left the whole impression at their disposal” (*Preface* to Vol. I.); no copies were taken by them from the publishers. The grant works out at five shillings a page. Volumes I and II were sold at twelve shillings; after this it was found necessary to fix the price at eighteen shillings. How far the authors cleared the expenses of publication does not appear. Apart from the grant Sir William Hooker anticipated “certain loss.”

Volume III was published in 1865 and the following year Professor Harvey died. Dr. Sonder took no further part in the work and died in 1881.

Sir Henry Barkly, Governor of the Cape of Good Hope from 1870–77, himself an ardent naturalist and an F.R.S., urged upon

Sir Joseph Hooker (who had succeeded his father as Director of Kew) the completion of the work of Harvey and Sonder for which the Colonial Parliament had voted a subsidy of £200 per volume in 1872, but never drawn. At that time I was assisting Sir Joseph Hooker by sub-editing his *Flora of British India*. He suggested to me that I should undertake the completion of that of the Cape. It was obvious that it would not be remunerative work and could not be attempted unless I could secure and combine it with a position which would afford some emolument as well as some leisure for scientific work. My hopes were not realized. In 1875 I accepted the post of Assistant Director of Kew and commenced, what proved, thirty years of administrative official life.

Although this precluded having time for any part of the *Flora* myself, I was able to enlist the aid of numerous contributors in carrying it on. The general task of supervising and editing a work which was part of a project initiated by Kew appeared to fall naturally within the scope of my official duty.

Harvey was not "anxious to fix a boundary line" to the *Flora*. It was determined in the continuation "to include, as far as possible, all known flowering plants occurring in the area between the Tropic of Capricorn and the Ocean" (*Preface* to Vol. VI.). To the north, the future volumes would be supplemented by the '*Flora of Tropical Africa*', the continuation of which was also projected at Kew under my supervision.

A striking fact in the volumes published by Harvey is the large number of species only represented by a single collection. It was obviously desirable to have more copious material to work upon, if only to supply more ample data for the geographical distribution. One name must be singled out from the numerous body of contributors. In 1897 I wrote in the preface to Volume VI, "More than thirty years have rolled away since Professor Harvey bore eloquent testimony to the indefatigable services of Peter Macowan, Esq., B.A., F.L.S., then Principal of Shaw's College, Grahamstown, now Government Botanist. Time has not staled his enthusiasm for the beautiful *Flora* amidst which he has spent the best years of his life, nor his energy in investigating it. Without his self-sacrificing aid the present undertaking would have been miserably incomplete." (He died in 1909.)

On the same occasion I recorded the fact that :—"During the last twenty years (since 1877) the time of one member of the Kew Staff has been almost exclusively occupied with the determination of fresh accessions of South African plants. Upwards of 10,000 specimens have been named and catalogued for South African botanists and collectors, and a considerable number have been figured and described. These labours were a necessary preparation for the continuation of the *Flora* on its extended scale." The member of the Kew staff is Mr. N. E. Brown, A.L.S., who has made the South African flora the devotion of his life, and has acquired a complete mastery of its features and topography.

He has been the invaluable mainstay of my own share in the undertaking.

The often impatient critics of the want of visible progress in the preparation of the Flora had of course no insight into the reality. Harvey thought that the Flora, as he had planned it, could "scarcely be completed in less than ten years." He made good use of the access willingly permitted him to type specimens in the principal Continental herbaria, but single handed he must have been obliged to adopt a good deal of nomenclature at its face value. By entrusting important orders to experienced botanists, more particularly in cases where they had previously made an order a special study, I secured what may be called a monographic as contrasted with a less exhaustive floristic treatment. The former implied a thorough critical examination of the material on which each species was founded and of its nomenclature. It may be hoped that in this way some finality has been reached. The ground has been cleared of the uncertainties of previous literature and is ready for occupation by the results of fresh exploration. As Dr. Burt Davy, late of the Transvaal Department of Agriculture, writes to me :—"The Flora Capensis forms a permanent and sound foundation for a series of Local Floras of South Africa"; on the first of these he is himself engaged.

From 1877, when I was able to start the work on an effective basis, preparation was steadily pushed on. There was a peculiar satisfaction in being able to secure the co-operation of South African contributors. Dr. Harry Bolus undertook *Ericaceae*, to which for many years he had given assiduous study in the field. Ultimately, unhappily, ill-health compelled him to abandon an unfinished task; this threw the arrangements for Vol. IV, which was to have commenced with *Ericaceae*, into arrears. A greater disappointment was his abandonment of the task of describing the *Orchideae*, the subject of his continuous study from 1882 till his death thirty years later; I was able to entrust them to Mr. R. A. Rolfe, A.L.S., who had contributed the *Orchideae* to the seventh volume of the Flora of Tropical Africa. I had better fortune with the *Proteaceae*; they were undertaken by Mr. E. P. Phillips, one of the staff of the South African Museum, who was granted leave of absence by the Trustees to come to Kew to work out the order, with which he had obtained a first-hand acquaintance in the field. The *Penaeaceae* were contributed by Miss Edith Layard Stephens, B.A., of the Botany Department, South African College, Cape Town.

Printing was commenced in 1896 with Vol. VI, which contains "the whole of the plants known familiarly as Cape Bulbs"; it was elaborated by Mr. John Gilbert Baker, F.R.S., and had been in preparation for several years but had been held back to include the novelties continually coming to hand. Vol. VII followed; it contained the remaining orders of Monocotyledons. As other important monographic portions were ready they were sent

to press as soon as possible. The contents of the volumes IV–VII fit into the systematic sequence but do not follow a chronological one in publication. In each volume the actual dates of the several portions are carefully noted on the verso of the short title.

The printing was necessarily slow. The completion fills upwards of 4,800 pages; it was issued in 26 parts, each (except the two last) containing 12 sheets (192 pages). This is a little less than a part a year; we succeeded, however, in getting out two parts during the War. The contributors' manuscript was first sub-edited by Mr. C. H. Wright, A.L.S., to secure uniformity in minor technical matters, citations and typography; each proof was read three times, by myself, by Mr. Brown for topography and finally by Mr. Wright who, in accordance with Kew practice, checked each citation by actual reference to the authority quoted.

The present publishers agreed to print and publish the completion on Sir William Hooker's stipulation that I should take 100 copies of each part "on the day of sale at the selling price." I was also responsible for the cost of corrections of the press beyond an agreed amount. To meet this and the remuneration of contributors the Cape Government voted £1,500 (in instalments of £250); the Natal Government £450, but beyond this it held its hand; fortunately the Transvaal Government relieved me of any further anxiety by two liberal grants amounting together to £850. The total receipts on account of the *Flora Capensis*, excluding payments to Dr. Harvey, therefore amount to £2,800.

In 1863, Sir William Hooker had made an estimate of the extent of the Cape Flora, of the number of volumes it would require and of the financial support which would be needed from the Cape Government. It is a singular coincidence that he fixed the number of volumes at 10 which is the *actual* number now published; nominally it is 7, but it was found necessary to split Vol. IV into two sections and Vol. V into three; each section is in itself a complete volume. At Sir W. Hooker's estimate of 500 pages to a volume, *K.B.* 1905, p. 20, the completion alone would have approached 10.

Sir W. Hooker's estimate, 10,000, of the number of species to be dealt with proves also to be close. Mr. Wright has made an enumeration of the species contained in the ten volumes and finds the number 11,705 and of these 2,016 are described for the first time.

The total sum required from South Africa was put by Sir W. Hooker at £2,500; this includes the purchase of 100 copies from the publisher and the payment of the authors at the rate of five shillings a page. The actual expenditure on the completion has been :—

Publisher	£1,200
Contributors	1,400
Sub-editing, etc. ..	200
	<hr/>
	£2,800

The five shillings rate has been maintained; but the liberality of the Transvaal has made it possible to add to it in cases where the work has been exceptionally laborious and difficult. Adding the subsidy paid to Dr. Harvey, the total amount contributed by the South African Government is £3,250, which considering enhanced prices is not greatly in excess of Sir William Hooker's estimate.

It remains to record the distribution of the copies purchased from the publisher:—50 were regularly sent to the Government of Cape Colony; 20 to that of Natal as long as it contributed its grant; on this lapsing they were transferred to the Transvaal Government; the remaining 30 copies were distributed from Kew to the contributors and to botanical institutions at home and abroad.

I cannot resist the pleasure of 'documenting' this brief history by the unsolicited testimony of an old continental correspondent to whom I was already indebted for:—"large collections of South African plants and loan of specimens."

[COPY.]

University Botanic Garden, and Museum,
Zurich.

Zurich,

17.7.'20.

Dear Sir,

I received a few days ago a new part of the *Flora Capensis*, and I have acknowledged the receipt by a post-card. You will allow me to write you a few words to tell you how greatly I appreciate your kindness in sending it me, and also the great work of yours in these splendid volumes. I believe I know what it wants to start such a standard work and to secure unity through all the volumes. You have done it in a marvellous way. We have a proverb in Switzerland:—"Many Cooks make a bad soup." That is not the case regarding your *Flora Capensis*; one always feels that there is a head cook who has the last word to say,

Yours very truly,

HANS SCHINZ,

Director.

XXXIII.—A NEW NATIONAL PINETUM: II.

The formation of a new National Collection of Conifers at Bedgebury, Kent, was described in the *Kew Bulletin*, 1924, p. 113. Work on this site has now been begun and, during the period March 17–21 of the present year, 315 species and varieties of *Abies*, *Tsuga*, *Pseudotsuga* and *Larix* were planted.

The planting extends over about eight acres of the top and north-east slope of a low hill. The ground had recently been cleared of a crop of chestnut coppice 12 years old, with oak standards 70–90 years old. Along one side was a belt of Scots Pine 110–120 years old. Some of these pines were left for shelter and a number of large ornamental conifers and large hollies were left for the same purpose.

The lower ground consists of good loam several feet deep overlying sand; the loam on the higher ground gradually diminishes in depth until on the top of the hill it is only 6-9 inches deep overlying hard sand bordering on sandstone, with here and there pieces of stone of varying size. In some parts the surface is covered with humus, whilst beneath the pines there is a thin layer of peat. The whole of the site is naturally well drained. The chief native plants at present apparent are bracken and bluebells.

Although the condition of the previous crop left no doubt as to the suitability of the ground for the new trees, the precaution was taken of digging holes three feet across and eighteen inches deep with the bottom broken up, and of using humus about the roots of each tree. A considerable number of the trees planted were presented by Mr. Gerald Loder and by Mr. F. R. S. Balfour; others were purchased from Messrs. Hillier and Son, Winchester. The trees are as far as possible geographically arranged in their respective genera, and each species forms a group. As a rule species are represented by from three to six plants and the average space between plants is 24 feet. Every plant is labelled and, as temporary protection against rabbits, each plant is surrounded by wire netting.

An idea of the size of some of the larger trees felled may be gleaned from the following measurements; the cubical contents are the actual sale figures, less fractions, from quarter girth measurements provided by the forester, Mr. Nelmes.

Saleable timber in trunk

Oak						Contents.
53 feet	..	..	..	..	..	130 cubic feet.
62	..	..	..	..	..	114 " "
47	..	..	..	..	..	141 " "
73	..	..	..	..	..	173 " "

Scots Pine						
44	..	..	..	..	..	83 " "
61	..	..	..	..	..	100 " "
56	..	..	..	..	..	77 " "

Douglas Fir						
61	..	..	..	..	..	71 " "

Common Spruce						
71	..	..	..	..	..	56 " "
70	..	..	..	..	..	58 " "
57	..	..	..	..	..	74 " "

<i>Sequoia sempervirens</i>						
56	..	..	..	..	..	70 " "

Sitka Spruce						
72	..	..	..	..	..	192 " "

The last-named tree as it lay on the ground measured 93 feet in length and the butt showed 59 annual rings. For a long period the annual increment had averaged $3\frac{1}{2}$ cubic feet. This tree grew where the soil was shallowest. Growth was comparatively slow for 12 years or until the roots had penetrated the hard pan of sand; from that time the annual rings were frequently $\frac{1}{2}$ — $\frac{3}{4}$ inch apart. A tree of *Abies grandis* still standing is 108 feet high and 9 feet 2 inches in girth at 4 feet 6 inches from the ground.

Several diseases are present on trees surrounding the newly planted area although the general health of neighbouring trees is good. The diseases from which trouble may be expected are *Chermes* spp. on *Abies*; *Aphis abietina* on *Picea*; *Hylobius abietis* on *Pinus* etc.; and *Dasyscypha calycina* on *Larix*.

XXXIV.—HUMBOLDT AND BONPLAND'S ITINERARY IN VENEZUELA.

N. Y. SANDWITH.

In *Kew Bull.* 1924, pp. 20–27, a fully indexed itinerary of Humboldt and Bonpland's travels in Mexico was given by Mr. T. A. Sprague for the use of botanists who might wish to know the geographical position of the Mexican localities from which plants are recorded in the *Nova Genera et Species Plantarum*. It was suggested by Mr. Sprague that the earlier explorations of the two travellers in Venezuela should be dealt with in a similar manner, and the following itinerary has been drawn up on the same lines, with his kind supervision and help. As this part of their travels was described in their *Relation Historique*, it has been possible to enter into greater detail. Since many Venezuelan species extend into Trinidad and British Guiana, an exact knowledge of Humboldt and Bonpland's Venezuelan localities is of great value in the investigation of the floras of those colonies.

The great importance of this expedition to botanical science can be realised when it is considered that, prior to the arrival of Humboldt and Bonpland in Venezuela, the Orinoco region was botanically unexplored, and even the northern coast region was very imperfectly known. Loeffling had visited Cumaná, Barcelona and the Missions of Piritu in 1754–55, and a few years later Jacquin collected along the coast, principally at Caracas, Coro and Zauca. After Jacquin's return to Europe in 1759, a lively connection was kept up between the Imperial Gardens at Schönbrunn and the shores of the Caribbean Sea, and between 1786 and 1788 extensive collections of plants were made in northern Venezuela by the gardeners Bredemeyer and Schücht.

Ten years later, in 1798, the great expedition of Humboldt and Bonpland left Spain for South America, and landed at Cumaná,

the important coast town of eastern Venezuela, in the middle of July. In their *Relation Historique* the travels of the two great naturalists in Venezuela are from this point onwards described by Humboldt in a vivid and attractive style, full of imagination and not lacking in humour, which blends happily the most critical scientific investigations with a wealth of Herodotean anecdote. Cumaná was made a centre for four months, and in spite of its low-lying position and the intense heat of the climate, it always retained a strong hold on Humboldt's affections, as it had provided him with his earliest experiences of the tropics. The immediate vicinity proved rather barren, and was chiefly remarkable for its cactus-thickets; on the coast grew some halophytic *Portulacaceae*, *Sesuvium*, *Gomphrena flava*, *Avicennia tomentosa*, and numerous Mimosas and Cassias. A short expedition was made to the Peninsula of Araya to visit the salt-works, and a longer one inland to the Missions of the Chayma Indians. This involved an ascent of the mountain range which runs parallel with the coast, and here *Polygala montana*, *Byrsonima coccolobifolia* and the first *Melastomaceae* were seen by Humboldt to his great delight. After crossing the difficult Cerro del Imposible, the journey was continued through various Missions, of which Cumanacoe was evidently the richest in new and interesting plants. Some days were spent at the Monastery at Caripe, and the Cueva del Guacharo, a cave inhabited by the remarkable nocturnal birds known as guacharos, was visited; but at length Humboldt realised to his embarrassment that the monks were starving themselves in order to provide for their guests, so a retreat was hastily beaten on September 22nd.

On November 16th the travellers left Cumaná by sea for La Guayra, the port of Caracas, touching at Nueva Barcelona and at Higuerote, east of Cabo Codera. At this point the sea was known to become much rougher beyond the Cape, so Bonpland, who was not a good sailor, left Humboldt on board and travelled by land to Caracas. He was rewarded by the discovery of some very good plants, such as *Bauhinia ferruginea*, *Brownea racemosa* and other *Leguminosae*, and reached Caracas on the 25th, four days later than Humboldt. The latter had landed at La Guayra, notorious for its yellow fever, and travelled to the capital by an interesting mountain route. More than two months were spent at Caracas, which is described as possessing a delightful climate, only marred by mists and winds, which blow up the valleys from different directions from the sea. During this stay, the ascent of the Silla, which rises above the city on the east to a height of over 8,000 feet, was accomplished. Humboldt was much struck by the similarity between the flora of the Silla and that of the high Andes of Colombia, such genera as *Befaria*, *Gaultheria*, *Vaccinium*, *Andromeda* and *Nertera* being characteristic of both regions.

On February 7th, 1800, the journey to the Orinoco, Rio Negro and Casiquiare was begun, and from this time onwards no appreciable halt was made until the travellers had returned

down the Orinoco and had reached Angostura. The route lay inland from Caracas down the Guayre valley in a south-westerly direction to the Lake of Tacarigua or Valencia, from which a new Charophyte was obtained and named *Chara compressa*. From Nueva Valencia a short digression was made to Puerto Cabello, the port on the coast, from which a new road was being constructed to the fertile valleys of Aragua round the lake. Humboldt and Bonpland, on resuming their journey through these valleys, followed round the south side of the lake to Villa de Cura, and then descended to the vast trackless llanos, which extend throughout Venezuela and Colombia between the Andes and Venezuelan coast-range and the Orinoco. According to Humboldt, they are covered with grasses (*Cenchrus*, *Paspalum*), sedges (*Kyllingia*) and sensitive Mimosas, with little else to relieve the eye except the frequent mirages.

After two days' travelling over these burning plains the town of Calabozo was reached, and here instructive if painful tests were made on the shock of the gymnotus, or electric eel. Four more days on the llanos brought the expedition to San Fernando de Apure, where the long three months' river-journey began. A large canoe was bought, with a pilot and four Indians to manage it, and this new stage started on March 30th with a comparatively luxurious and most beautiful voyage down the Apure in an easterly direction towards the Orinoco, which was reached on April 5th. From here the party rowed continuously upstream, in growing discomfort from the clouds of mosquitoes, past the turtle-beds and the confluence of the Rio Meta to the famous cataracts of Atures and Maypures; and at this point in his narrative Humboldt's wonderful descriptions dispel any vestige of doubt which might be entertained about his susceptibility to natural beauty, revealing a most keenly impressionable imagination, not dulled or blunted by the cold statistics of science, though always ready to accord them a no less full attention at the proper time. Opportunities for botanising on the banks of the Orinoco were afforded only here and there, for instance at Carichana, below Atures, where Bonpland gathered a rich harvest; and drying plants, like sleeping and everything else, was a most difficult and unhappy business owing to continuous torment from the clouds of insects.

On April 24th, according to plan, the party left the Orinoco where it bends round at right angles towards its source in the east, and entered the "black" waters of the Atabapo, passing the night at the Mission station of San Fernando. Now it was that the main purpose of the expedition began, namely the unravelling of the intricate relations which exist between the basins of the Orinoco and Amazons in this little-explored area, and the solution of all the mystery and error which had enshrouded the identification of the various connecting tributaries, and the land of Eldorado. Humboldt was able to shew that the nomenclature of rivers can present problems no less knotty than that of plants; he was also the first to present a true and coherent account of

this part of the map of America, and to correct the mistakes of such romantic writers as Raleigh. Thus, even if no plants at all had been collected on the expedition, the fulfilment of this main purpose in the interests of geographical science would have rendered it memorable for all time.

Leaving San Fernando the party took their famous short cut down the "black" or coffee-coloured, mosquito-less rivers past Javita and the portage of Pimichin, entered the Rio Negro, and proceeding downstream reached their most southern limit at the town of San Carlos, on May 7th. From here Humboldt had intended to visit the Portuguese Missions on the Rio Negro, but he discovered that he was suspected of ulterior motives, and that orders had been given that his scientific instruments should be seized and he himself conveyed down the Amazons and thence across to Lisbon. Accordingly he abandoned his plan, and began to return north from San Carlos on May 10th. The return journey was made up the "white" Rio Casiquiare, which connects the Rio Negro with the Orinoco, and is remarkable for the wildness of its banks and the bloodthirstiness of its mosquitoes. This route was followed in later times by Spruce, who came up the Rio Negro and Casiquiare, past San Carlos and Vasiva, as far as the junction of the Casiquiare and Orinoco at Esmeralda.* He also made a later expedition from San Carlos to Maypures, going by the Rio Negro and the short cut. Humboldt and Bonpland reached Esmeralda on May 21st and stayed there two days, watching the preparation of the deadly curare, and gathering information about the source of the Orinoco, which lay only a few days' journey to the east but was inaccessible owing to the hostility of some savage Indian tribes. Here too they saw Brazil-nuts in plenty, and learned that *Bertholletia*, which they were the first to describe, was locally common at a short distance to the east. It is more at home, however, in the Amazons region. On May 23rd, they began to voyage down the Upper Orinoco, and four days later rejoined their former route at San Fernando de Atabapo, proceeding from there downstream without interruption until they reached Angostura, the capital of Nueva Guayana, on June 14th.

The two travellers had scarcely begun to enjoy a well-earned rest in the healthy air of this region, when both were laid low with fever—contracted possibly on the banks of the Casiquiare, and asserting itself with the change of air and routine—and were forced to remain a whole month at Angostura. Humboldt, as usual, recovered quickly, but the condition of Bonpland remained serious for some weeks, and he was prevented from examining the small number of plants he had been able to save from the damp of the Upper Orinoco region. During this illness an emissary was dispatched down the Orinoco to the Missions of the Rio Caroni to fetch flowering branches of the tree producing

* Notes of a Botanist on the Amazon and Andes, ed. Wallace, pp. 386-470 (1908).

the famous cortex *Angosturae*, which was used as a remedy for fever, though it had proved too strong for Bonpland. The tree was found to represent a new genus of *Meliaceae* [it is now placed in *Rutaceae*], and was sent to Willdenow, who dedicated it to Bonpland, naming the species *Bonplandia trifoliata*. The name, however, had to be changed to *Cusparia* on account of the previously published *Bonplandia* Cav. (*Polemoniaceae*).

On July 13th the two were at last able to resume their journey to the coast, and crossing the llanos of Pao arrived at Nueva Barcelona on the 23rd. Another month was passed here, owing this time to the illness of Humboldt, and part of the collections, including some of their herbarium specimens, were entrusted to a monk, Juan Gonzales, who had resolved to cross to Europe. Unfortunately these were lost, with Juan Gonzales, in a shipwreck off the coast of Africa. When Humboldt had recovered, he and Bonpland made an expedition to the hot springs on the Cerro del Bergantin, and then journeyed by sea to Cumaná. The voyage was accomplished at some risk, for England and Spain were at war, and it was believed that English warships were on the look-out for Spanish mail-boats travelling along the Venezuelan coast. For this reason Humboldt booked a passage on a sloop which was carrying on a contraband trade with Trinidad, under passports given by the governor of the island. To his dismay, however, the boat was hailed and fired at directly it had reached the open sea by a privateer from Nova Scotia. Humboldt was making some rather unsuccessful appeals to the captain when, fortunately for him, an English sloop-of-war hove in sight and sent a midshipman on board. This "polite young man" invited Humboldt to spend the night on "The Hawk", where he was received with the utmost kindness by Captain Garnier, who had heard of the enterprise and took a great interest in its results. On the next day Humboldt was able to continue his voyage on the sloop in safety with impressions "which are not yet effaced from my remembrance, and which led me to cherish still more the career I had chosen."

At Cumaná each familiar spot was greeted with pleasure, and a long time was passed in completing the investigation of the neighbourhood, and in revisiting the Peninsula of Araya to look for the origin of some alum which was well known in the town. The mineral was found, as well as some new arborescent species of *Croton*. At length, on November 16th, the two travellers took advantage of the presence of an American vessel at Cumaná to leave the blockaded port and, crossing once more to Nueva Barcelona, found the vessel waiting which was to convey them across to Cuba.

An example may be given to explain how the index of localities should be used. The name Antimano is followed by the number 108 in the index. Reference to this number in the itinerary shows that Antimano is near Caracas, and is mentioned in Vol.

iv. p. 58 of Humboldt's Personal Narrative, ed. Williams. Names of places which may be found in a good atlas are printed in black type. As far as possible the localities have been arranged in the order in which they were visited. This was impracticable in the case of the numerous small places in the neighbourhood of Cumaná and Caracas, where Humboldt and Bonpland stayed for a long time. The spelling given by Humboldt and Bonpland has been followed except in a few cases where it is undoubtedly wrong.

The following maps may be consulted :—

Humboldt and Bonpland's Itinerary in Venezuela (Petermann's Geogr. Mittheil., 1869, t. 16).

Map of Northern South America (Humboldt and Bonpland, Voyage, Atlas Géogr., sér. i, t. 22).

Map of Northern South America (Rand, Macnally and Co., New York : Library Atlas of the World, vol. ii, tt. 41, 42).

Geological, Orographical and Phytogeographical maps of Northern Venezuela (Petermann's Geogr. Mittheil., 1896, tt. 10, 11, 15).

Political Map of Venezuela (Petermann's Mittheil., Ergänzungsband, 1878, No. 55, t. 2).

Profile of route from La Guayra to Caracas (Humboldt and Bonpland, Voyage, Atlas Géogr., sér. i, t. 4).

The Orinoco, from confluence of Rio Sinaruco down to Angostura, (*op. cit.* t. 15).

The Orinoco, Atabapo, Casiquiare and Rio Negro (*op. cit.* t. 16).

Calabozo and the Apure (*op. cit.* t. 17).

The Apure, and the Orinoco up to the confluence of the Meta. (*op. cit.* t. 18).

The Apure from San Fernando to the Orinoco (*op. cit.* t. 21).

Lake Tacarigua, Valencia and Puerto Cabello (Petermann's Geogr. Mittheil., 1888, t. 19.).

ITINERARY.

Cumaná and surrounding country, July 16–Nov. 16, 1799.
(*vide* Humb. & Bonpl., Personal Narrative, ed. Williams, ii. 175–294 ; iii. 1–346).

1 Montaña de **Paria** ; 2 **Carupano** ; 3 **Cariaco** (iii. 181) ; 4 **Peninsula de Araya** (ii. 242) ; 5 Punta Araya (246) ; 6 Castillo de Araya (266) ; 7 Barigon, 8 Caney, and 9 Maniquarez (277) ; 10 Laguna Chica (vi. 97) ; 11 Punta de Chuparuparu (98) ; 12 **Cumaná** (ii. 175 ; iii. 307) ; 13 El Salado (ii. 176) ; 14 Rio Manzanares (201) ; 15 Rio Santa Catalina (195) ; 16 Chara de los Capuchinos (ii. 201 ; iii. 7) ; 17 Bordones (iii. 27) ; 18 Punta Delgada (ii. 185) ; 19 Punta Gorda (256) ; 20 Golfo de Santa Fé (iii. 29).

Journey from Cumaná to the Missions of the Chayma Indians, and back, Sept. 4–24, 1799.

(*vide* Humb. & Bonpl., Personal Narrative, ed Williams, iii. 1–206).

21 Los Frailes, 22 Cuesta de Caneyes, and 23 Rio Guriental (iii. 13); 24 Quetepe, 1,140 ft. (17); 25 Cerro del Imposible, 1,782 ft. (20); 26 Peñas Negras (24); 27 Rio Manzanares, 28 Rio Cedeno, 29 Rio Vichoroco, 30 Rio Luca Pérez, 31 Pié de la Cuesta, and 32 Rio San Juan (34, footnote); 33 San Fernando (40); 34 Arenas (46); 35 **Cumanacoa**, 624 ft. (51); 36 Conuco de Bermúdez (69); 37 Rinconada (71); 38 Rio Juagua (72); 39 Quebrada del Cuchivano (72); 40 **Cumanacoa** (85); 41 Aricagua, 42 Rio Pututucuar, 43 Cuesta del Cocollar, and 44 Hato del Cocollar, 2,448 ft. (86); 45 **Cerro del Turimiquiri**, 6,300 ft. (91); 46 San Antonio (97); 47 Rio Colorado (98); 48 Rio Guarapiche (99); 49 Guanaguana (99); 50 Punzera (103); 51 Cuchilla de Guanaguana, 3,288 ft. (105); 52 **Caripe**, 2,472 ft. (111); 53 Cueva del Guacharo (119); 54 El Guardia de San Agustin, 3,198 ft. (162); 55 El Purgatorio (163); 56 Montaña de Santa Maria (164); 57 Fantasma; 58 Santa Cruz (175); 59 Catuaro (176); 60 Cerro de Saca Manteca, 61 Cerro Meapire, and 62 Buenavista (181); 63 **Cariaco** (182); 64 Rio Carenicuar (198); 65 Pericantral (200); 66 **Cumaná** (205).

Journey from Cumaná to La Guayra and Caracas, Nov. 16–25, 1799.

(*vide* Humb. & Bonpl., Personal Narrative, ed. Williams, iii. 347–381).

67 Nueva **Barcelona** (iii. 360); 68 Rio Neveri (360); 69 El Morro de Barcelona (364); 70 **Higuerote** (370). [From Higuerote, Humboldt (H.) continued by sea to La Guayra and thence to Caracas, whereas Bonpland (B.) travelled by land to Caracas.]—(H.) 71 **Cabo Codera** (375); 72 **La Guayra** (381); 73 **Caracas** (381).—(B.) 74 Montaña de Capaya (377); 75 Curiepe (381); 76 Rio Guatira, 77 **Guarenas**, and 78 **Caracas** (377).

Route from La Guayra to Caracas.

(*vide* Humb. & Bonpl., Personal Narrative, ed. Williams, iii. 407–417; Atlas Géogr., sér. 1, t. 4).

79 **La Guayra** (iii. 407); 80 Maiquetia (381); 81 Torre Quemada, 82 Curucuti, and 83 Salto (410); 84 La Venta (Venta Grande de Avila), 3,636 ft. (407, 410, 412); 85 Guayavo (413); 86 La Cumbre, 4,584 ft. (413); 87 La Cuchilla (413); 88 Las Vueltas (416); 89 Fuente de Sanchorquiz (416); 90 La Cruz de la Guayra (417); 91 Aduana de la Pastora; 92 La Trinidad; 93 **Caracas** (417).

Neighbourhood of Caracas, November 21, 1799–Feb. 7, 1800. (*vide* Humb. & Bonpl., Personal Narrative, ed. Williams, iii. 420–535).

94 Rio Guayre (iii. 446); 95 Rio Catuche (449); 96 Rio Anauco (449); 97 Quebradas de Tacagua, Tipe, Cotecita, Catoche, Anauco & Chacaito, vegetation of (iv. 74); 98 Hacienda de Blandin (iii. 480); 99 Chacao (480, 511); 100 Gallegos (481); 101 Rio Chacaito (481, 483); 102 Puerta de la Silla de Caracas, 4,110 ft. (482); 103 El Pejual, 5,958 ft. (489); 104 Picacho de la Silla, 8,100 ft. (506).

Journey from Caracas to the valleys of Aragua, Nueva Valencia, Puerto Cabello, and Villa de Cura, February 7–March 7, 1800. (*vide* Humb. & Bonpl., Personal Narrative, ed. Williams, iv. 1–271; map of Lake Tacarigua and neighbourhood in Petermann's Geogr. Mittheil., 1888, t. 19).

105 Rio Guayre, 106 La Vega, 107 Carapa, and 108 Antimani (iv. 58); 109 Hacienda de Don Fernando Key-Muñoz (64); 110 Las Ajuntas, 111 Rio San Pedro, 112 Rio Macarao, and 113 Cerro de Buenavista, 5,010 ft. (73); 114 Los Teques (73, 80); 115 Montaña del Higuerote (78); 116 San Pedro, 3,504 ft. (78); 117 Las Lagunetas, 118 Garavatos, and 119 Cerro de las Cocuyzas, 5,070 ft. (79); 120 Hacienda del Tuy, 1,770 ft. (80); 121 Manterola (82); 122 Quebrada Seca (90); 123 Quebrada del Oro (92); 124 Mamon (100); 125 **La Victoria**, 1,614 ft. (101); 126 Rio Calanchas, and 127 El Calvario (107); 128 San Mateo, 129 Turmero, and 130 **Maracay** (81, 109); 131 La Cabrera (122); 132 Hacienda de Cura (122); 133 Aguas calientes de Mariara, 134 El Cucurucho de Coco and 135 Turiamo (126); 136 **Laguna de Valencia (Tacarigua)**, and Isla de Cura (131, 140); 137 Burro (159); 138 Punta Zamuro (176); 139 Guacara, and 140 Mocundo (177); 141 Los Guayos (185); 142 **Nueva Valencia**, 1,482 ft. (189); 143 Barbula (194, 212); 144 La Trinchera (194); 145 Rio de Aguas Calientes (197); 146 Cambury (198); 147 Casa del Isleño (200); 148 Rio Guaiguaza, and 149 Rio Estevan (200); 150 **Puerto Cabello** (201–211); 151 Guacara (228); 152 **Nueva Valencia** (299); 153 Don Pedro, and 154 La Negra (264); 155 Guigue (268); 156 Maria Magdalena (269); 157 **Cura**, Villa de (269); 158 Rio de las Minas (270).

Journey from Villa de Cura to San Fernando de Apure, March 11–27, 1800.

(*vide* Humb. & Bonpl., Personal Narrative, ed. Williams, iv. 271–389; Atlas Géogr., sér. 1, t. 17).

159 Rio Tucutunemo (iv. 291); 160 Cerro de Tucutunemo (275); 161 Cerro de Chacao (275); 162 Real de Santa Barbara (275); 163 San Juan, 1,164 ft. (271); 164 Piedras Negras (278); 165 Luque (273); 166 Juncalito (273); 167 Malpaso, and 168 Piedras Azules (273); 169 Cerro de Flores (273); 170 Parapara, 516 ft. (291); 171 **Ortiz** (291); 172 Mesa de Paja

(291); 173 El Cayman (La Guadalupe) (319); 174 Mesa de Calabozo (335); 175 **Calabozo** (337); 176 Rio Guarico, and 177 Rio Uritucu (**Orituco**) (337); 178 Mesa de Pavones (383); 179 Hato de Alta Gracia (387); 180 San Gerónimo del Guayaval (San Gerónimo del Piritál) (387); 181 Rio Guarico (387); 182 **San Fernando de Apure** (389).

Journey from San Fernando de Apure to San Carlos del Rio Negro, March 30–May 7, 1800, via the Apure, Orinoco, Atabapo and Rio Negro.

(*vide* Humb. & Bonpl., Personal Narrative, ed. Williams iv. 416–573, v. 1–364; Atlas Géogr., sér. 1, tt. 16, 18, 21).

183 **Rio Apure** (iv. 416); 184 Rio Guarico (417); 185 Isla del Apurito, and 186 **Rio Apurito** (417); 187 Diamante (418); 188 Caño de la Tigresa (426); 189 La Vuelta del Joval (426); 190 Caño Rico (433); 191 Isla de Aves (434); 192 Rio Arichuna, and 193 Santa Barbara de Arichuna (434); 194 Vuelta del Cochino roto (435); 195 Isla de Carizales (439); 196 Vuelta de Basilio (441); 197 Algodonal (445); 198 Caño del Manatí (447); 199 Isla de la Conserva (450); 200 Vuelta del Palmito (452); 201 Isla del Apurito (453); 202 Punta Curiquima (459); 203 Encaramada, San Luis del (461, 464); 204 Rio Cabullare (467); 205 Boca de la Tortuga (Cucuruparu) (475, 479); 206 Playa de Huevos (495); 207 **Uruana**, Concepcion de (499); 208 Saraguaca (499); 209 Isla de Uruana, and 210 Isla de Manteca (499); 211 **Baraguan** (502); 212 **Rio Suapure** or Sivapuri, 213 Rio Caripo, 214 Rio Sinarucó, and 215 Isla de Macupina (507); 216 Playa de Pararuma (508); 217 Isla de Javanovo, 218 Caño Aujacoa, 219 Mogote de Cocuyza (540); 220 Rio Paruasi or Paruati (540, 541); 221 El Castillo (541); 222, Raudal de Marimara, and 223 Piedra de Marimara (544); 224 Carichana (544); 225 Caño Orupe, 226 Piedra del Tigre, and 227 Raudal de Cariven (**Cariben**) (558); 228 **Rio Meta** (563); 229 Caño de Uita, and 230 Caño de Endava (569); 231 Raudal de Tabaje (569); 232 San Borja (569); 233 Guaripo (Guaripa), Playa de (572); 234 Isla de Guachaco (572); 235 Rio Parueni, and 236 Isla de Panumana (573); 237 Rio Anaveni (v. 9); 238 **Atures** (10, 43); 238A Raudales de Atures: Salto del Piapoco, Raudal de Javariveni, Raudal de Canucari (54); 239 Puerto de Abajo (10); 240 Mapara (11); 241 Pico de Uniana (43); 242 Puerto de Arriba (119); 243 Rio Cataniapo (119, 125); 244 Raudal de Garcita (127); 245 Isla de Tomo (127); 246 **Rio Tomo** (128); 247 Raudal de los Guahibos (128); 248 **Maypures** (133); 249 Manimi (137); 250 Puerto de Arriba (170); 251 Raudal de Cameji, and 252 Isla de Piedra Raton (170); 253 **Rio Sipapo** (Tipapu), and 254 **Rio Vichada** (Visata) (174, 177); 255 Caño Pirajavi, and 256 Rio Zama (184); 257 **Rio Mataveni** (192); 258 Rio Siucurivapu, and 259 Aricagua (193); 260 Rio Ucata, 261 Rio Arapa, and 262 Rio Caranaveni (193); 263 Conucos de Siquita (193); 264 **Rio Guaviare**, and

265 **Rio Atabapo** (194); 266 **San Fernando de Atabapo** (194); 267 Conucos de Guapasoso (224); 268 Rio Ipurichepano, and 269 Piedra del Tigre (227); 270 Piedra y Raudalito de Guarinuma (228); 271 Kemarumo, and 272 Mendaxari (229); 273 San Baltasar (230); 274 Rio Guasucavi (233, 238); 275 Piedra de la Madre (233); 276 Rio Temi (233, 238); 277 Piedra de Astor (242); 278 Rio Tuamini, and 279 Javita (**Yavita**), San Antonio de (243); 280 Pimichin (255, 282); 281 **Rio Negro** (289); 282 **Maroa** (353); 283 Rio Aquio, and 284 **Rio Tomo** (353); 285 **San Miguel** de Davipe (355); 286 Rio Con-
orichite (Itiniveni) (358); 287 Isla de Dapa (362); 288 Rio Casiquiare, and 289 Isla de Cumarai (364); 290 **San Carlos** (364); 291 Castillo de San Felipe (366).

Journey from San Carlos del Rio Negro to Angostura (Ciudad Bolivar) via the Casiquiare, Esmeralda and the Orinoco, May 10—June 14, 1800.

(*vide* Humb. & Bonpl., Personal Narrative, ed. Williams, v. 399–691; Atlas Géogr., sér. 1, tt. 15, 16, 18).

292 Isla de Zaruma, and 293 Isla de Mini (Mibita) (v. 401); 294 Piedra de Unumane (401); 295 **Rio Casiquiare** (401); 296 Isla de Garigave (402); 297 Raudal de Caravine (403); 298 San Francisco Solano (403); 299 Caño Daquiapo, 300 Rio Guachaparu, and 301 Raudal de Cananivacari (409); 302 Guanari (410); 303 Piedra de Culimacari (412); 304 Rio Pacimoni (419); 305 Mandavaca (Quirabuena) (420); 306 Rio Idapa (435); 307 Raudal de Cunuri (436); 308 Caño Caterico (437); 309 Vasiva (438); 310 Rio Itiniveni (439); 311 Caño Curamuni (441); 312 Puerto del Cacao, and 313 Lago Duractumini (443); 314 **Esmeralda** (502); 315 Cerro **Duida** (502) [315A Rio Padamo, Rio Ocamo, Cerro Mapaya, Cerro Guanaja, Rio Amaguaca and Rio Gehette (535, 536)]; 316 Rio Tamatama, 317 Rio Guapo, and 318 Rio Sodomoni (550); 319 Rio Yao (Rio Jao) (602); 320 Santa Barbara (602); 321 Rio Ventuari (Venituari) (603); 322 Isla de Minisi (602, 609); 323 Rio Quejanuma, 324 Rio Ubua, and 325 Rio Masao (609); 326 **San Fernando de Atabapo** (609); 327 Rio Mataveni, and 328 El Castillito (612); 329 **Maypures** (613); 330 Raudal de Guahibos y Garcita (615); 331 Puerto de la Expedicion, and 332 Atarupe (615); 333 **Atures** (629); 334 Raudalito de Carucari (630); 335 Panumana, 336 Guachaco, 337 San Borja, 338 Raudal de Tabaje, 339 Raudal de **Cariven**, 340 **Rio Meta**, and 341 Carichana (633); 342 **Baraguan**, and 343 **Uruana** (637); 344 Cucuruparu (Playa de la Tortuga) (673); 345 Caño de la Tortuga, and 346 San Miguel de la Tortuga (674); 347 Hato de San Rafael del Capuchino (675); 348 Villa de Caycara (**Caicara**) and 349 Puerto Sedeno (679); 350 Cabruta (680); 351 Rio Cuchivero, and 352 Alta Gracia (682); 353 Acaru (684); 354 **Rio Caura** (684); 355 Puerto de los Frailes (686); 356 Ciudad de la Piedra, 357 El Torno, 358 Caño Marapiche, and

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Journey from Angostura (Ciudad Bolivar) via Villa del Pao to Nueva Barcelona, Cumaná and back to Nueva Barcelona, July 11-17, 1800.

(*vide* Humb. & Bonpl., Personal Narrative, ed. Williams, vi 1-110; Atlas Géogr., sér. 1, t. 22).

366 Mision de Cari (vi. 6); 367 Rio Cari, and 368 Rio de Agua Clara (44); 369 Matagorda, and 370 Riecetos (45); 371 Villa del **Pao** (45); 372 Mesa de Amana (47); 373 Santa Cruz de Cachipo (47, 55); 374 San José de Curataquiche (49); 375 Nueva **Barcelona** (75); 376 Aguas Calientes de Bergantin (80); 377 Rio Narigual (81); 378 **Cumaná** (88, 109); 379 Peninsula de **Araya** (92); 380 Castillo de Araya, 381 Caney, and 382 Barigon (93); 383 Laguna Chica (96); 384 Punta de Chuparuparu (98); 385 Arroyo del Robalo (101); 386 Maniquarez (108); 387 Morro de Nueva **Barcelona** (110).

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XXXV.—ADDITIONS TO THE INDEX KEWENSIS : V.*

As already indicated in *Kew Bull.*, 1925, p. 159, many names of new species published in Wallich's Catalogue and Roxburgh's Hortus Bengalensis were at first invalid owing to their being unaccompanied by descriptions, but were subsequently described in G. Don's General System (1831–37) and elsewhere. As, under International Rules (ed. 2, 1912), the effective date of publication of the name of a new group is the date of its description, the citations in the Index Kewensis of *nomina nuda* published by Wallich and Roxburgh were incomplete, and are therefore being supplemented by references to the authors, if any, who were the first to supply descriptions of the species. These supplementary references will appear in Suppl. VII of the Index Kewensis, as they were not obtained in time for inclusion in Suppl. VI, now in the press. For the convenience of botanists engaged in the study of the Indian and Malayan floras a condensed list is now given. This is restricted to species first described in the General System, which are the most easily overlooked.

Lists of some new species and new combinations published in G. Don's General System and not hitherto included in the Index Kewensis are also given. Some of them duplicate the names of previously published species, and were originally omitted from the Index under the mistaken impression that they were identical with these.

It has not been possible to ascertain the precise dates of publication of the several volumes and parts of the General System, but such evidence as has come to light is given below. According to Loudon's Gardener's Magazine, xi. 194 (April 1835), the first three volumes were published as entire volumes in the first place, and afterwards in monthly parts, while the fourth volume was to be "published in parts, as they are written." T. A. S.

DATES OF PUBLICATION OF G. DON'S GENERAL SYSTEM.

- Vol. i. (1831). Announced to appear on Aug. 1, 1831 (*vide Bull. Sc. Nat.*, Sept. 1831, xxvi. 260). Reviewed in Loudon's Magazine of Natural History, Jan. 1832, v. 74, and Loudon's Gardener's Magazine, April 1832, viii. 203. In the latter, and in Linnaea, 1833, viii. Litt.-Ber. 63, the number of pages in vol. i. was given as 840, whereas it is actually 818 + xxviii.
- Vol. ii. (1832). Mentioned as "just published" in a review written on Nov. 19, 1832 (*vide Loud. Gard. Mag.*, Dec. 1832, viii. 698). Reviewed also in Loud. Mag. Nat. Hist., Jan. 1833, vi. 65.
- Vol. iii. (1834). Mentioned as "the forthcoming volume" by D. Don in Edin. New Phil. Journ., July 1834, xvii. 151. Reviewed in Loud. Mag. Nat. Hist., Feb. 1835, viii. 122, where it is mentioned as "recently published"; and in Loud. Gard. Mag., April 1835, xi. 194.

* Continued from *Kew Bull.* 1925, 188.

Vol. iv. (1837). Reviewed in Loud. Gard. Mag., Aug. 1838, xiv. 380. The original title-page is dated 1837, while the one issued along with the publisher's "Advertisement" (which is dated February, 1838) bears the date 1838. As the volume was apparently published in parts (vide Loud. Gard. Mag., April 1835, xi. 194), it is probable that the greater portion of it appeared in 1837, and perhaps only the last part in the beginning of 1838.

I. NOMINA NUDA PUBLISHED IN WALLICH'S CATALOGUE AND ROXBURGH'S HORTUS BENGALENSIS, AND VALIDATED BY DESCRIPTION IN G. DON'S GENERAL SYSTEM.*

- | | |
|-----------------------------------------------|----------------------------------------------|
| <i>Alstonia cuneata</i> Wall. iv. 87. | <i>Elaeocarpus Ganitrus</i> Roxb. i. 559. |
| <i>A. macrophylla</i> Wall. iv. 87. | <i>E. rugosus</i> Roxb. i. 559. |
| <i>Alyxia odorata</i> Wall. iv. 97. | <i>Embelia ramosa</i> Wall. iv. 24. |
| <i>Bassia polyantha</i> Wall. iv. 36. | <i>Erycibe expansa</i> Wall. iv. 392. |
| <i>B. villosa</i> Wall. iv. 36. | <i>E. fragrans</i> Wall. iv. 392. |
| <i>Bignonia adenophylla</i> Wall. iv. 221. | <i>E. subspicata</i> Wall. iv. 392. |
| <i>B. fimbriata</i> Wall. iv. 221. | <i>Exacum grandiflorum</i> Wall. iv. 212. |
| <i>B. ghorta</i> Buch.-Ham. iv. 222. | <i>E. pteranthum</i> Wall. iv. 212. |
| <i>B. macrostachya</i> Wall. iv. 221. | <i>E. stylosum</i> Wall. iv. 212. |
| <i>Butea parviflora</i> Roxb. ii. 373. | <i>Garcinia pedunculata</i> Roxb. i. 620. |
| <i>Calophyllum tetrapetalum</i> Roxb. i. 622. | <i>Gentiana Moorcroftiana</i> Wall. iv. 182. |
| <i>Carissa coriacea</i> Wall. iv. 105. | <i>Geum elatum</i> Wall. ii. 526. |
| <i>C. macrophylla</i> Wall. iv. 104. | <i>Gossypium acuminatum</i> Roxb. i. 487. |
| <i>Cerasus capricida</i> Wall. ii. 515. | <i>G. obtusifolium</i> Roxb. i. 487. |
| <i>Cercocoma singaporiana</i> Wall. iv. 83. | <i>Grewia caudata</i> Wall. i. 547. |
| <i>Codonopsis truncata</i> Wall. iii. 736. | <i>G. didyma</i> Roxb. i. 549. |
| <i>Colbertia augusta</i> Wall. i. 77. | <i>G. helicterifolia</i> Wall. i. 548. |
| <i>Corchorus decemangularis</i> Roxb. i. 544. | <i>G. humilis</i> Wall. i. 549. |
| <i>Cordia latifolia</i> Wall. iv. 375. | <i>G. sclerophylla</i> Roxb. i. 550. |
| <i>Crataegus glauca</i> Wall. ii. 598. | <i>G. sepriaria</i> Roxb. i. 548. |
| <i>Cryptolepis elegans</i> Wall. iv. 82. | <i>Guettarda Brunonis</i> Wall. iii. 552. |
| <i>Cuscuta capillaris</i> Wall. iv. 305. | <i>G. Finlaysonianae</i> Wall. iii. 552. |
| <i>C. sulcata</i> Roxb. iv. 305. | <i>G. missionis</i> Wall. iii. 550. |
| <i>Cynoglossum Roylei</i> Wall. iv. 356. | <i>G. peduncularis</i> Wall. iii. 551. |
| <i>C. vesiculosum</i> Wall. iv. 354. | <i>Hedera aesculifolia</i> Wall. iii. 394. |
| <i>Dalbergia robusta</i> Roxb. ii. 375. | <i>H. glauca</i> Wall. iii. 394. |
| <i>Deutzia Brunoniana</i> Wall. ii. 808. | <i>H. heterophylla</i> Wall. iii. 394. |
| <i>D. corymbosa</i> R. Br. ii. 808. | <i>H. ovata</i> Wall. iii. 392. |
| <i>Diospyros amoena</i> Wall. iv. 40. | <i>H. subcordata</i> Wall. iii. 394. |
| <i>D. densiflora</i> Wall. iv. 41. | <i>H. undulata</i> Wall. iii. 394. |
| <i>D. ehretioides</i> Wall. iv. 40. | <i>Hedyotis argentea</i> Wall. iii. 526. |
| <i>D. heterophylla</i> Wall. iv. 41. | <i>H. articularis</i> R. Br. iii. 527. |
| <i>D. oblonga</i> Wall. iv. 40. | <i>H. capitellata</i> Wall. iii. 527. |
| <i>D. undulata</i> Wall. iv. 40. | <i>H. congesta</i> Wall. iii. 526. |
| <i>Dipterocarpus alatus</i> Roxb. i. 813. | <i>H. costata</i> R. Br. iii. 526. |
| <i>Echites elliptica</i> Wall. iv. 75. | <i>H. elongata</i> Wall. iii. 527. |
| <i>E. glandulifera</i> Wall. iv. 75. | <i>H. mollis</i> Wall. iii. 527. |
| <i>E. lucida</i> Wall. iv. 75. | <i>H. nodiflora</i> Wall. iii. 526. |
| <i>E. micrantha</i> Wall. iv. 75. | <i>H. pinifolia</i> Wall. iii. 526. |
| <i>Echium Benthami</i> Wall. iv. 333. | <i>H. polycarpa</i> Wall. iii. 527. |
| <i>Ehretia Wightiana</i> Wall. iv. 388. | <i>H. stylosa</i> R. Br. iii. 527. |
| | <i>H. vestita</i> R. Br. iii. 526. |
| | <i>Helicteres oblonga</i> Wall. i. 508. |

* The numbers following each name are those of the volume and page of G. Don's General System.

- H. spicata* Colebr. i. 507.
H. virgata Wall. i. 508.
Heynea quinquejuga Roxb. i. 685.
Hibiscus cancellatus Roxb. i. 480.
H. collinus Roxb. i. 478.
H. scandens Roxb. i. 478.
H. simplex Roxb. i. 481.
Holarrhena pubescens Wall. iv. 78.
Hunteria eugeniaefolia Wall. iv. 105.
H. fascicularis Wall. iv. 105.
Ichnocarpus fragrans Wall. iv. 78.
Ixora amoena Wall. iii. 571.
I. Brunonis Wall. iii. 573.
I. elongata Heyne iii. 571.
I. erubescens Wall. iii. 571.
I. Finlaysoniana Wall. 572.
I. leucantha Heyne iii. 572.
I. Notoniana Wall. iii. 571.
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I. propinqua R. Br. iii. 570.
I. siamensis Wall. iii. 573.
I. spectabilis Wall. iii. 572.
I. subsessilis Wall. iii. 572.
Jasminum amplexicaule Buch.-Ham.
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J. attenuatum Roxb. iv. 62.
J. bifarium Wall. iv. 60.
J. bignoniaceum Wall. iv. 63.
J. calophyllum Wall. iv. 63.
J. cordifolium Wall. iv. 60.
J. decussatum Wall. iv. 62.
J. extensum Wall. iv. 62.
J. Finlaysonianum Wall. iv. 60.
J. glandulosum Wall. iv. 61.
J. laetum Wall. iv. 61.
J. punctatum Buch.-Ham. *ex* Wall.
iv. 60.
J. quinqueflorum Heyne *ex* Wall.
iv. 59.
J. reticulatum Wall. iv. 60.
J. syringaefolium Wall. iv. 62.
J. trifoliatum Telfair *ex* Wall. iv.
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Linociera macrophylla Wall. iv. 53.
L. malabarica Wall. iv. 53.
L. oblonga Wall. iv. 53.
L. terniflora Wall. iv. 53.
Lithospermum villosum Wall. iv.
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L. chenopodiifolia Wall. iii. 709.
Luffa amara Wall. iii. 29.
L. hederacea Wall. iii. 29.
L. parvula Buch.-Ham. iii. 29.
L. satpatia Buch.-Ham. iii. 29.
Melia robusta Roxb. i. 680.
Melodinus eugeniaefolia Wall. iv.
101.
Mimusops lucida Wall. iv. 35.
Mitreola paniculata Wall. iv. 171.
Modecca aliena Wall. iii. 59.
M. diversifolia Wall. iii. 59.
M. Wightiana Wall. iii. 59.
Momordica Hamiltoniana Wall. iii.
36.
M. Heyneana Wall. iii. 36.
M. paina Buch.-Ham. iii. 36.
M. renigera Wall. iii. 36.
M. tubiflora Roxb. iii. 36.
Mussaenda calycina Wall. iii. 489.
M. cordifolia Wall. iii. 491.
M. parva Wall. iii. 491.
M. repens, Wall. iii. 491.
M. tomentosa Wight *ex* Wall. iii.
491.
M. uniflora Wall. iii. 491.
M. variolosa Wall. iii. 490.
M. villosa Wall. iii. 489.
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M. multicaulis Wall. iv. 345.
M. pallens Wall. iv. 345.
M. rotundifolia Wall. iv. 344.
Nauclea Brunonis Wall. iii. 467.
N. diversifolia Wall. iii. 467.
N. missionis Wall. iii. 467.
N. peduncularis Wall. iii. 469.
N. polycephala Wall. iii. 467.
N. sericea Wall. iii. 467.
N. Wallichiana R. Br. iii. 466.
Nymphaea cyanea Roxb. i. 125.
Olea acuminata Wall. iv. 49.
O. attenuata Wall. iv. 48.
O. compacta Wall. iv. 48.
O. cuspidata Wall. iv. 49.
O. grandiflora Wall. iv. 48.
O. Heyneana Wall. iv. 48.
O. Lindlei Wall. iv. 48.
O. maritima Wall. iv. 49.
O. pauciflora Wall. iv. 49.
O. salicifolia Wall. iv. 48.
O. Wightiana Wall. iv. 49.
Onosma bicolor Wall. iv. 317.
O. hispidum Wall. iv. 317.
O. vestitum Wall. iv. 317.
Ophiorhiza argentea Wall. iii. 522.
O. bracteolata Wall. iii. 521.
O. discolor R. Br. iii. 522.
O. erubescens Wall. iii. 522.
O. geminata Wall. iii. 523.
O. Harrisiana (sphalm. Harrisonii)
Heyne iii. 523.
O. hispidula Wall. iii. 523.
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P. bijugum Wall. iii. 386.
P. Finlaysonianum Wall. iii. 386.
P. Heyneanum Wall. iii. 385.
P. tripinnatum Wall. iii. 384.
Parsonsia oblonga Wall. iv. 80.
P. ovata Wall. iv. 80.

- P. spiralis* Wall. iv. 80.
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P. singaporiana Wall. iii. 55.
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P. weberaefolia Wall. iii. 575.
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Pyrus ursina Wall. ii. 648.
P. variolosa Wall. ii. 622.
P. vestita Wall. ii. 647.
Rhododendron cinnamomeum Wall. iii. 844.
R. lepidotum Wall. iii. 845.
Rhus paniculata Wall. ii. 73.
Ribes acuminatum Wall. iii. 187.
Rubia angustissima Wall. iii. 643.
R. charaefolia Wall. iii. 643.
Rubus nutans Wall. ii. 538.
Sicyos pentandrus Wall. iii. 34.
Sideroxylon nervosum Wall. iv. 28.
Spermacoce avana R. Br. iii. 621.
S. Brunonis Wall. iii. 621.
S. compressa Wall. iii. 621.
S. longicaulis R. Br. iii. 621.
S. tenera R. Br. iii. 621.
Sterculia angustifolia Roxb. i. 516
S. coccinea Roxb. i. 516.
S. guttata Roxb. i. 516.
S. lanceaefolia Roxb. i. 517.
S. parviflora Roxb. i. 516.
S. villosa Roxb. i. 517.
Strophanthus divaricatus Wall. iv. 85.
S. Jackianus Wall. iv. 85.
Strychnos laurina Wall. iv. 65.
S. ovalifolia Wall. iv. 65.
Styrax Finlaysonianum Wall. iv. 5.
S. Porterianum Wall. iv. 5.
S. virgatum Wall. iv. 5.
Swertia cuneata Wall. iv. 176.
Swietenia trilocularis Roxb. i. 688.
Symplocos adenophylla Wall. iv. 3.
S. caudata Wall. iv. 3.
S. Hamiltoniana Wall. iv. 3.
S. laurina Wall. iv. 3.
S. lucida Wall. iv. 3.
S. mollis Wall. iv. 5.
S. obtusa Wall. iv. 3.
S. polycarpa Wall. iv. 3.
S. pyrifolia Wall. iv. 3.
S. ramosissima Wall. iv. 3.
S. rigida Wall. iv. 3.
Syringa Emodi Wall. iv. 51.
Tournefortia Heyneana Wall. iv. 369.
T. ovata Wall. iv. 369.
Trianthema govindia Buch.-Ham. iii. 72.
Trichosanthes officinalis Buch.-Ham. iii. 38.
T. Russeliana Wall. iii. 39.
Triumfetta vestita Wall. i. 547.
Uncaria elliptica R. Br. iii. 471.
U. laevigata Wall. iii. 470.
U. speciosa Wall. iii. 471.
Uvaria nitida Roxb. i. 93.
Wendlandia ligustrina Wall. iii. 518.
W. nitens Wall. iii. 518.
W. Notoniana Wall. iii. 518.
W. Wightiana Wall. iii. 520.
Willughbeia coriacea Wall. iv. 102.

II. NEW SPECIES PUBLISHED IN G. DON'S GENERAL SYSTEM.

- Astragalus agrestis* Dougl. ex G. Don ii. 258.—Am. bor.
A. collinus Dougl. ex G. Don ii. 256.—Am. bor.
A. flexuosus Dougl. ex G. Don ii. 256.—Am. bor.
A. glareosus Dougl. ex G. Don ii. 270.—Am. bor.
A. lentiginosus Dougl. ex G. Don ii. 257.—Am. bor.
A. pectinatus Dougl. ex G. Don ii. 257.—Am. bor.
Bauhinia emarginata Roxb. ex G. Don ii. 462.—Ind. or.
Caesalpinia pulcherrima G. Don ii. 431.—Bras.
Capsicum Willdenowii G. Don iv. 447.—Am. austr.
Celastrus Wallichii G. Don ii. 8.—Penins. Mal.
Cerastium nipaulense Wall. ex G. Don i. 445.—Himal.
Corchorus quadrangularis G. Don i. 544.—Sierra Leone.
Corydalis Hamiltonii G. Don i. 143.—Himal.
Dalea lanata Sessé & Moc. ex G. Don ii. 224.—Mexico.
D. ovalifolia G. Don ii. 226.—Mexico.
D. triphylla Sessé & Moc. ex G. Don ii. 224.—Mexico.
Elaeocarpus pubescens G. Don i. 560.—Ind. or.
Eugenia axillaris G. Don ii. 866.—Mexico.
Galium Schultesii G. Don iii. 657.—Caucas.
Genista Tenorii G. Don ii. 468.—Ital.
Glycyne guineensis G. Don ii. 221.—Afr. trop. occ.
Leptadenia cymosa G. Don iv. 124.—Ind. or.

Lupinus albicaulis Dougl. ex G. Don ii. 366.—Am. bor.
L. humifusus Sessé & Moc. ex G. Don ii. 366.—Mexico.
L. minimus Dougl. ex G. Don ii. 367.—Am. bor.
L. sulphureus Dougl. ex G. Don ii. 367.—Am. bor.
Medicago intermedia DC. ex G. Don ii. 169.—Ital.
Oxalis biloba G. Don i. 760.—Peruv.
O. Bowiei Ait. ex G. Don i. 761.—Afr. austr.
O. leptophylla G. Don i. 756.—Chile.
O. minima Ruiz & Pav. ex G. Don i. 760.—Peruv.
O. villosa G. Don i. 762.—Mexico.
Oxytropis splendens Dougl. ex G. Don ii. 251.—Am. bor.
Passiflora obscura G. Don iii. 50.—Am. austr.
Pyrus kamaonensis Wall. ex G. Don ii. 647.—Himal.
Rhus mysorensis G. Don ii. 74.—Ind. or.
Sida stellata G. Don i. 499.—Afr. trop. occ.
Virecta lutea G. Don iii. 521.—Sierra Leone.
V. paniculata G. Don iii. 521.—Sierra Leone.

III. NEW COMBINATIONS PROPOSED IN G. DON'S GENERAL SYSTEM.

Cassandra angustifolia iii. 830 : *Andromeda angustifolia*.
Conohoria racemosa i. 341 : *Alsodeia racemosa*.
Cordia Chamissoniana iv. 381 : *C. latifolia* Cham.
Cordia humilis iv. 383 : *Varronia humilis*.
Cordia parviflora iv. 382 : *Varronia parviflora*.
Cordia Sellowiana iv. 381 : *C. grandis* Cham. & Schlecht.
Desmodium arboreum ii. 298 : *Hedysarum arboreum* Roxb.
Desmodium reptans ii. 298 : *Hedysarum reptans*.
Halenia asclepiadea iv. 177 : *Swertia asclepiadea*.
Halenia gracilis iv. 177 : *Swertia gracilis*.
Halenia hypericoides iv. 177 : *Swertia hypericoides*.
Halenia plantaginea iv. 177 : *Swertia plantaginea*.
Hedyosmum racemosum iii. 434 : *Tafalla racemosa*.
Hypericum confertum i. 606 : *H. quadrangulum*, var. *confertum*.
Linociera montana iv. 53 : *Chionanthus montanus*.
Melaleuca acerosa ii. 815 : *Billotia acerosa*.
Mertensia pilosa iv. 320 : *Pulmonaria pilosa*.
Oldenlandia brachypoda iii. 529 : *Hedyotis brachypoda*.
Pelargonium maculatum i. 740 : *Geranium maculatum* Andr.
Quamoclit hastata iv. 259 : *Ipomoea hastata*.
Sarcocaulon Patersonii i. 715 : *Monsonia Patersonii*.
Viviania crenata i. 418 : *Macraea crenata*.
Viviania grandiflora i. 418 : *Macraea grandifolia*.
Viviania parviflora i. 418 : *Macraea parvifolia*.

XXXVI.—STANDARD-SPECIES OF LEPIDIUM AND BISCUTELLA.

M. L. GREEN.

The Type-method, as presented in the Type-basis Code,* possesses two defects : (1) that in many genera there is difference of opinion as to which species is to be regarded as the type ; (2) that in certain genera the acceptance of the type-species as a standard leads to revolutionary changes in nomenclature.

* Science, n.s. xlix. 333 (1919) ; lii. 312 (1921).

These two defects are absent from the Standard-method, which embodies the principle of the Type-method, while making provision for exceptions. As the essence of the Standard-method consists in agreement on a standard-species for each generic name, it is of the first importance that lists of suggested standard-species should be published at least a year before they are finally submitted to the consideration of an International Botanical Congress, so that they may be subjected to the scrutiny of monographers and the general botanical public. By the adoption of this plan any suggested standard-species to which objection can be sustained may be replaced, so that the list when finally submitted to the vote may be acceptable to botanists as a whole.

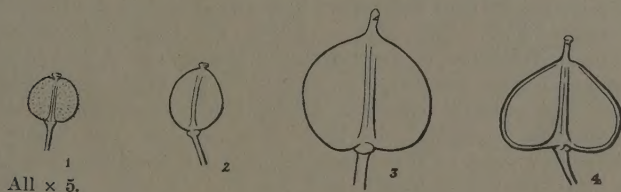
Prof. Thellung, who is well known for his researches on the Swiss flora, and is the author of a monograph of *Lepidium*, writes to take exception to the standard-species suggested for *Lepidium* and *Biscutella* (K.B. 1925, p. 49), and at his desire the present supplementary article is published. As regards *Biscutella*, there is little to choose between *B. auriculata* and *B. didyma*. The former was the first species mentioned both in Hortus Cliffortianus and Species Plantarum but the latter, as pointed out by Prof. Thellung, approaches more nearly in the shape of its fruit to the idea of a "double shield" indicated by the generic name. It also belongs to the larger section of the genus. On these accounts it would perhaps be better to adopt *B. didyma* as the standard-species.

The case of *Lepidium* is not so simple. Prof. Thellung argues firstly that the type-species is not *L. Draba* but *L. latifolium*, and points out in the second place that the adoption of *L. Draba* as the standard-species is undesirable, as it constitutes, together with *L. chalepense*, the section *Cardaria*, which is sometimes accorded separate generic rank. Prof. Thellung* considers that the flowers and silicles represented on Tournefort's plate (Inst. t. 103) are those of *L. latifolium*, with the exception of figures C, D and E, which represent *L. graminifolium*, and he states that *L. Draba* is absolutely excluded by the fact that figure GH, which seems to be a later stage of F, represents the silicle as dehiscing. It should not be forgotten, however, that botanical figures of the 17th century were frequently more or less conventionalized,† and as Tournefort was evidently unaware that *L. Draba*, which he included as *Lepidium humile*, *incanum*, *arvense*, had indehiscent fruits, he may conceivably have represented it as dehiscing in the same way as the other species. Prof. Thellung also points out that the style in figures F and GH is too short for *L. Draba*. With equal force it may be argued that the style is too long for *L. latifolium*, with which he identifies it. Of the accompanying text figures, fig. 1 represents a typical silicle of *L. latifolium*, subsp. *eu-latifolium* Thell.; 2 is *L. latifolium*, subsp. *sibiricum* Thell.; 3 is a reproduction of Tournefort's figure F (taken from the

* Die Gattung *Lepidium*, 9, footnote 3 (1906).

† Vide Journ. Bot. 1923, 193, for the case of *Bignonia capreolata*.

first edition of the *Institutiones*, which was issued as *Elemens de Botanique*); and 4 represents *L. Draba*. It may be left to the reader to decide which of the two species Tournefort's figure F is meant to represent. The fact that Linné transferred *L. Draba* to the genus *Cochlearia* in 1759 is not quite so significant as might



appear at first sight. Linné did not adhere implicitly to the type-method. When dividing a species into two independent species, for example, he sometimes retained the specific name for the variety, and re-named the type.*

Prof. Thellung's second argument is more cogent. The section *Cardaria* has been treated as an independent genus, not only in the first half of the nineteenth century, but more recently by Caruel in *Parl. Fl. Ital.* ix. 658 (1893), Rouy & Foucaud, *Fl. France*, ii. 78 (1895), Hayek in *Beih. Bot. Centralbl.* xxvii. i. 288 (1911), Schweidler in *Beih. Bot. Centralbl.* xxvii. i. 361 (1911), and Handel-Mazzetti in *Ann. Nat. Hofmus. Wien*, xxvii. 55 (1913). As Prof. Thellung justly remarks, if *Lepidium Draba* were accepted as the standard-species, those who regard *Cardaria* as an independent genus would have to apply the name *Lepidium* to it, and find another name for the 130 remaining species now known as *Lepidium*. The selection of *L. latifolium* as the standard-species has the further advantage that this was the species known as *λεπιδιον* by Dioscorides and *Lepidium* by Pliny.†

While I do not consider that *Lepidium latifolium* and *Biscutella didyma* are the type-species of *Lepidium* and *Biscutella*, nevertheless I fully agree with Prof. Thellung that on grounds of convenience it is desirable to accept them as standard-species. I have discussed the question with Mr. T. A. Sprague, who is Convener of the Sub-Committee on Nomenclature appointed by the Imperial Botanical Conference, and he fully agrees with the conclusions now reached.

XXXVII.—MISCELLANEOUS NOTES.

MR. G. W. LINES, B.A., has been appointed by the Secretary of State for the Colonies, Superintendent, Agricultural Department, Nigeria.

* *Vide* Journ. Bot. 1923, 26.

† Thellung, *Die Gattung Lepidium*, 9, footnote 1 (1906).

DR. J. BURTT DAVY has been appointed Lecturer in Tropical Botany at the Imperial Forestry Institute, University of Oxford.

Dianthus crenatus Thunb.—A further study of "*Dianthus crenatus*" Auct. var., in the light of additional material, enables me to separate certain specimens hitherto included doubtfully in this species (*K.B.* 1922:221). These are now transferred to *D. mooiensis* Williams, by amending the description of that species. This makes a more natural, if less precisely definable, delimitation of these two variable species. Under this rearrangement all of the Transvaal material at Kew falls within the limits of *D. mooiensis*; and to these may be added a specimen collected by Dr. Sutherland in Natal, and *Tyson* 1119 from Griqualand East. This leaves *D. crenatus* Thunb. as a Coastal Region species ranging from Swellendam through the East Cape and the Transkei to Natal. It is a showy plant flowering (in South Africa) from August to January, and is well worth cultivation in warm localities. It should be noted that this is not the "*D. crenatus*" of Bot. Reg. 3: 256 figured from plants raised about 1817 from seed imported from the Cape by Messrs. Lee and Kennedy of Hammersmith, and which is *D. prostratus* Jacq. At that time the latter and *D. albens* appear to have been the only two South African species in cultivation in England.

Certain specimens hitherto doubtfully referred to "*D. crenatus*" form a distinct variety, var. **longicalyx** *Burt Davy*, var. nov., which differs from the typical form in the very elongate calyx-tube, with usually 4 to 5 (or even more) pairs of basal bracts. The type of this variety is *Rudatis* 1512! from Winkle Spruit, Natal; it has also been collected as follows: Natal (without precise locality) *Gueinzius*! *Sutherland*! *Plant* 75! *Rogers* 15012! *Wood* 747! Griqualand East, near Clydesdale, *Tyson* 2115!—flowering September to April. This variety approaches *D. Zeyheri* in the length of the calyx-tube, but differs in the much less fimbriate petals; also its geographical range is not the same. The three plants above referred to, and a variety of *D. mooiensis*, may be distinguished as follows:—

Leaves broad (up to 6·8 x 0·7 cm.), not rigid, obtuse, indistinctly 3-nerved:

Calyx-tube 1·9–3·5 cm. long: petals exserted 0·9–1 cm.

.....*crenatus*.

Calyx-tube 3–4·6 cm. long: petals exserted 1·4–1·8 cm.

.....var. *longicalyx*.

Leaves narrow (up to 6·5 x 0·4 cm.), very rigid, acute, prominently 5–6-nerved: calyx-tube 1·7–2·5 cm. long: petals exserted 0·5–1·5 cm.:

Petals fimbriately toothed.....*mooiensis*.

Petals shortly and crenately denticulate.....var. *dentatus*.

J. BURTT DAVY.

Lappula uncinata (Benth.) nom. nov.—In Fedde, Repert. xiv. 146 (1915), Brand has shown correctly that *Rindera glochidiata* Wall. (Wall. Cat. No. 926) is neither a *Cynoglossum* as considered by G. Don and by Bentham, nor a *Paracaryum* as considered by Bentham and Hooker, but an *Echinosperrum* and, restoring the older generic name of *Lappula* Moench, has named the species *L. glochidiata* (Wall.) Brand. But Wallich's name is invalid, as no description was published with it, and so *glochidiata* cannot stand. The next valid name in chronological order is *Cynoglossum uncinatum* Benth. in Royle Ill. Bot. Himal. 305 (1836) and the species should, therefore, be named as shown above.

In the synonymy given by Brand an error has crept in, as he quotes 1839 as the date of publication of Royle's work. This is, indeed, the date of the whole volume, but it was issued in parts and the fascicle in which *Cynoglossum uncinatum* Benth. was described was published in May, 1836 (*vide* the note facing page 1) and it takes precedence, therefore, of *Cynoglossum laxum* G. Don in Gen. Syst. iv. 356 (1837).

C. E. C. FISCHER.

Early Explorers in Australia.*—This book is perhaps the most comprehensive account of the early work of the Kew explorers when the Royal Gardens, Kew, first achieved their fame under the direction of Sir Joseph Banks, and before they became a National Institution. As illustrating the manner in which the botanical exploration of the Empire was so ably organised and prosecuted by Banks, reference is constantly being made to the activities of Kew both at home and abroad, the interrelation of one part of the Empire with another and with the home country, although the story itself is concerned with the early voyages and explorations in Australia. Dampier's discoveries, Robert Brown's voyages with Captain Flinders in the "Investigator," Banks' and Solander's voyage with Captain Cook in the "Endeavour," indicate the manner in which experience was gained to direct, at a later period, the travels of the Kew men sent out under Banks' auspices. Of these men Nelson is referred to and his voyage to Tasmania with Captain Bligh; Masson is mentioned as providing a suitable half-way home at the Cape for plants that cannot be sent to England direct; the transfer from Brazil of Allan Cunningham to Australia and James Bowie to the Cape, and at the last stage, Richard Cunningham, Allan's brother, to Australia, all indicate the widespread and correlated efforts of Banks. The Kew men, however, who figure chiefly are George Caley who arrived in Sydney in 1800 and who first explored in the Blue Mountains, and Allan Cunningham, who arrived in 1816 and carried on the work of exploration that Caley

* By Ida Lee. Methuen, 36, Essex Street, London, W.C. 2. Pp. vii. 651, Maps and ill. 41. Price 21s.

had begun. Cunningham's diary given day by day for a period of two years unfolds a romantic story of botanical exploration in a new country, and at the same time shows his natural love for the work and the pains he invariably took to record his observations, secure his specimens, see they were properly preserved, and forwarded to their ultimate destination, despite the innumerable difficulties which had to be surmounted. The detailed picture of the original flora and vegetation of Australia now made available by the publication of these diaries is full of interest to the botanist, the agriculturist, and the forester apart from the local interest to people actually living in the country described. The author and publishers are to be congratulated on making available these records of early exploration and discovery in a country that is undergoing such rapid changes.

Malayan Sapotaceae.*—Botanists interested in the flora of the Malayan region may have noted that Dr. H. J. Lam's Proefschrift for his Doctor's degree at Utrecht University in 1919 was an account of the *Verbenaceae* of the Archipelago. He now gives us another work of this same kind in his contribution to the series of monographs of families of plants of that region now being published in the Bulletin du Jardin Botanique de Buitenzorg. The series was inaugurated by Dr. J. J. Smith in 1923. Five of these studies have now appeared. All but the first have been in English. They include 1, *Loganiaceae* and *Buddleiaceae* by Cammerloher (1923), 2 and 3, *Combretaceae* and *Stylidiaceae* by van Slooten (1924), 4, *Bombacaceae* by Bakhuisen van der Brink (1924), and lastly No. 5, the present work. Like its predecessors it follows the lines laid down by Dr. J. J. Smith. The student is assisted by numerous good line drawings in the text. Keys precede the families and genera.

The genera *Sarcosperma*, *Boerlagella* and *Dubardella* are sufficiently divergent from *Sapotaceae*, in the opinion of the author, to necessitate their separation as two new families for which the names *Sarcospermaceae* (for the first) and *Boerlagellaceae* (for the other two) are proposed.

S. T. D.

Revision of the genus *Alphitonia*.—In *K.B.* 1925, p. 177, l. 8, delete the words from "or where" to "type specimens." Delete the asterisks on p. 178, l. 34 after *Ladbrook* 46; p. 181, l. 28 after *Bailey* 24; p. 184, l. 11 after *Elmer* 10335.

* The *Sapotaceae*, *Sarcospermaceae* and *Boerlagellaceae* of the Dutch East Indies and Surrounding Countries, by Dr. H. J. Lam. Landsdrukkery, Batavia, February, 1925. Ser. 3, vol. 7 No. 1-2. Pp. 289. Ill. 65, 5 francs.